

FLORIDA HIGHWAYS

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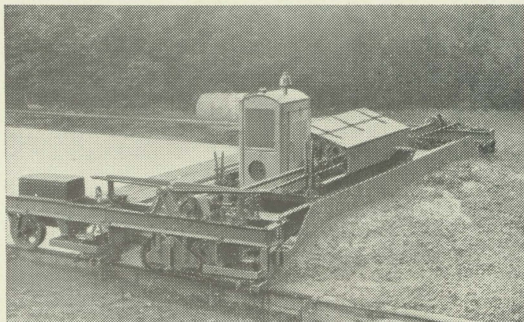
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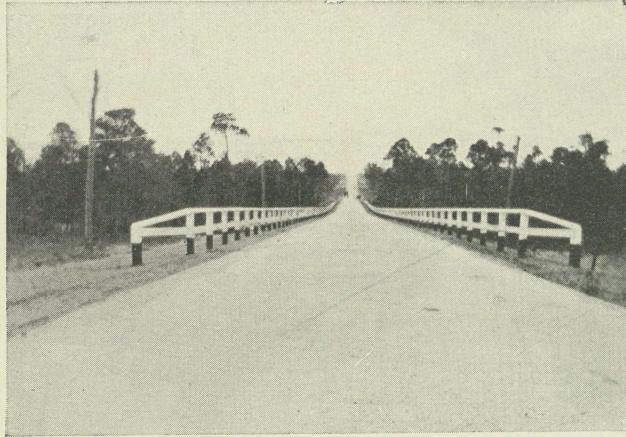
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State Road Number One

(By the Editor—Figures and Statistics by the Office Engineer)

Foreword

THE Chairman has suggested that in succeeding issues of Florida Highways, we emphasize in each some one of the preferential, trunk line roads of the State. Not, of course, to the exclusion at any time of news and views of the other roads of Florida, each and every road in the State System, occupying its peculiar and important place, but to give emphasis, one by one, to the preferential roads, with a view, in the end, of affording a bird-eye's view of the main highways of the State.

It is appropriate to begin with Road No. 1, and the accompanying article, and the greater part, if not all of the views presented in this issue, will deal with that great trans-state road.

The Route and Location

By designation of the Legislature of Florida, State Road No. 1 stretches from Nunez Ferry on the Perdido River at the Alabama State line on the west to Jacksonville on the east, a distance of four hundred and fourteen miles. Stretching east and west across Florida for the greatest width of the state in that direction, it is also by a few miles the longest road of a single numerical designation in Florida, and like most of the roads in the preferential system is an interstate highway, being a link in what is generally

known as "The Old Spanish Trail." It may be remarked in passing, that the condition of the Old Spanish Trail in Florida is superior, on the whole, to any link on the entire route, the road in our state being nearest a state of complete construction.

Leaving Jacksonville on the east, the road, concrete at the outset, follows a flat, level county until it leaves Lake City, where it encounters the hills, which, steadily rising, bring one to the outstanding red-clay hill country of the State. Scenically, like most of the roads of this peninsular state, it presents a pleasing beauty to the traveler, and the unfolding of one majestic panorama after another, affords a keen delight to those accustomed to regard Florida as a non-mountainous and flat State.

The Rivers.

One of the greatest difficulties, in fact, perhaps the greatest difficulty which has been encountered in the construction of this trans-state highway has been the spanning of the major rivers and streams which are encountered along its route. Westward from Jacksonville, it spans first, Little St. Mary's River, a stream insignificant in itself, but flowing through a deep declivity which necessitated bridge construction seemingly out of proportion to the magnitude of the waterway. Just west of Live Oak and on this road, the Hillman Bridge spans the far-famed and beauti-



Yellow River Bridge—Road 1—Okaloosa County.

ful Suwannee River. A photograph in this issue attests the beauty of this bridge and its environs.

Farther on, at the boundary between Leon and Gadsden Counties, the Ocklocknee River is crossed, then Little River and west of Quincy, the Apalachicola. The latter, said to drain the greatest territory of any river east of the Mississippi, offered real engineering difficulties, but Victory Bridge, spanning the stream, is convincing evidence of the successful manner in which the engineering department met and solved the problem. Bridges recently constructed on the road are those crossing Chipola River just east of Marianna, and Shoal and Yellow Rivers in Okaloosa County. At the Choctawhatchie River, another tremendous bridge building task confronted the State Road Department as was also the case at Black Water Bridge near Milton. Across Escambia River and Bay there stretches the longest free-of-tolls highway bridge in the South. This construction consisting of a series of fills and bridges, with a steel bridge across the river proper, is 3.49 miles in extent, and was constructed at a cost of approximately one million dollars.

The fine progress which has been made and is being made in this State in road and bridge construction is evidenced by the fact that every single one of the bridges mentioned above is now constructed and open to traffic.

Present Status of the Road.

Figures are dull and uninteresting at best, but if any idea of the present status of the road is to be given, it is necessary to resort to something very like statistics. Thus, we find that of the entire mileage of the road at the present time, eliminating the decimals, 112 miles are of concrete, 10 miles of bituminous macadam, 7 miles of brick, 50 miles of surface treated

lime rock base, 70 miles of surface treated sand-clay, 146 miles of graveled sand-clay, $4\frac{1}{2}$ miles of concrete and timber bridges and 15 miles of various types through the cities along the road—and NOT ONE FOOT OF UNIMPROVED ROAD ON THE WHOLE STRETCH.

To go into further detail, there are 11,214 feet of concrete bridges and 12,875 feet of timber bridges on the road. Twenty-two grade crossings have been eliminated by relocation of route, nine have been eliminated by overhead crossings and three by under passes.

Between Jacksonville and Tallahassee the entire road is paved, or under construction for paving, with the exception of one stretch of 6 miles between Greenville and the Aucilla River, and this section is under contract for grading preparatory to paving. In connection with this short stretch, the statement frequently heretofore made will bear repeating that though it was the first state sand clay construction between Jacksonville and Tallahassee, it is the last to be replaced, numerous difficult curves having made relocation necessary.

West of Tallahassee, Gadsden County has available as the proceeds of a bond issue, funds to supplement state money for the paving of the road through that county and farther westward, the State is carrying out a programme of surface-treating the sand clay road already constructed. Already seventy miles have been so treated and the work is going steadily on. This programme, comparatively new with the Department, is expected to take care of the situation for a period of three years, at the expiration of which time it will either be renewed or replaced with permanent surfacing.

The oldest stretch of paving in west Florida is a

stretch of brick 6.7 miles in extent in Santa Rosa County. Originally constructed of a width of 9 feet eight inches, the Department has recently completed the construction of concrete shoulders which give it now a width of 18 feet 8 inches. In Escambia County between the Escambia Bay Bridge and Pensacola, grading is in progress along what is known as the Scenic Route, preparatory to paving the stretch, while from Pensacola west to the Alabama State line the construction is of concrete.

The Chairman of the State Road Department is for all-Florida. In declaration and in practice, he has stood always for the development and upbuilding of the whole state, and is insistent that the road system of Florida, throughout its length and breadth, shall be second to none in the nation. From the moment of commencing his tenure of office, one of his aims has been a paved Road One from Jacksonville to the Alabama line. Some idea of the progress which he has made in attaining this end may be gleaned from this article.

A Contrast.

Personal references are, perhaps, unseemly but it is hard to resist one at this juncture. A few years ago—a very few, at that—the writer left Jacksonville to drive to Tallahassee, roughly 170 miles. He and his companion were driving a good car, one noted for its sturdiness and “pulling-power”—no, it wasn’t a Ford. Just eight hours after leaving Jacksonville, the pair arrived in Lake City, and they had been traveling all the while. That is to say, the wheels had been revolving all the time, but in certain stretches where as the residents remarked “there was just one sandbed on top of another”, the progress forward was exactly nil without the additional pushing power of

one or the other of the passengers. Wearied, the travelers decided to “call it a day” and slept at Lake City, a little over 60 miles from Jacksonville, starting out again the next morning and reaching Tallahassee during the afternoon of the second day.

Just the day before this article was written, the writer had a business appointment in Jacksonville. He left Tallahassee at ten o’clock in the forenoon, lunched in Jacksonville, spent three hours there and returned to Tallahassee, reaching the Capital City at nine o’clock in the evening, and traveled within the State speed limit every foot of the way!

And the beauty of it all is, that this condition is not peculiar to Road 1—it prevails throughout the State, as later articles with reference to roads in the preferential system will clearly indicate.

New Style Lullaby

Hush-a-bye, baby, pretty one sleep,
Daddy’s gone golfing to win the club sweep,
If he plays nicely—I hope that he will—
Mother will show him her dressmaker’s bill.

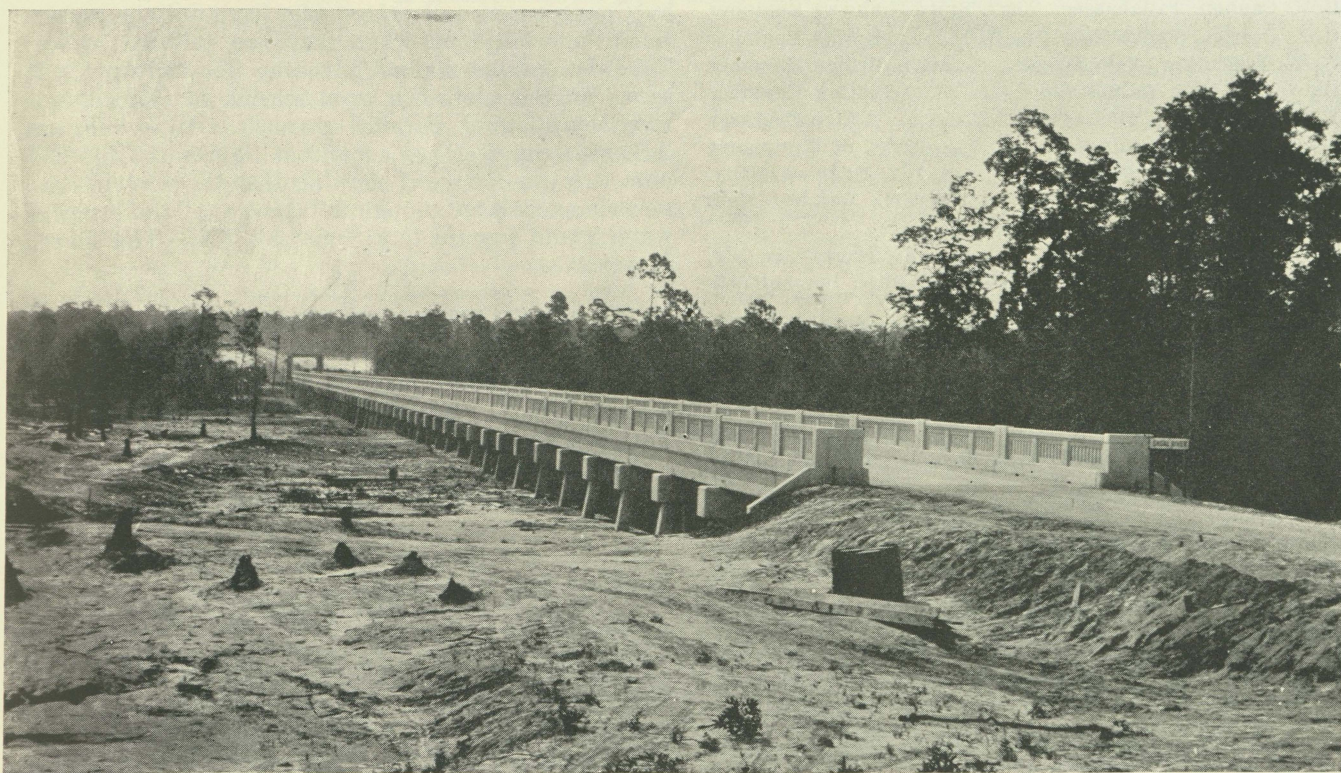
Hush-a-bye, baby, safe in your cot,
Daddy’s come home and his temper is hot;
Cuddle down closer, baby of mine,
Daddy went round in a hundred and nine.

—Boston Transcript.

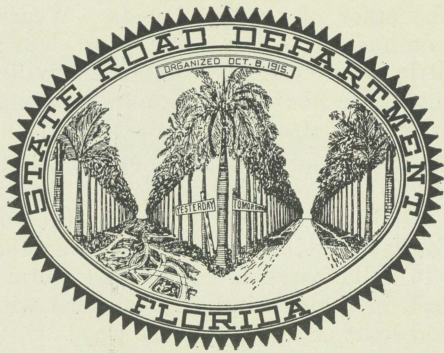
And “Besides, You Need a Shave”

History Teacher: “And what did Hero say to Leander after he swam the Hellespont?”

The Kid: “You’re all wet.”—Kentucky Highways.



Shoal River Bridge—Road 1—Okaloosa County.



Florida Highways

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388.6 MILES PAVED ROAD IN LAKE COUNTY.

According to a report prepared by G. S. Mickle, engineer, Lake County has a total of 388.6 miles of paved roads, out of a total of 588.6 miles of roads of every description within the confines of the county, and all of the hard surfaced roads have been completed except 43 miles upon which contractors are now at work.

The road improvement program started in Lake County sixteen years ago, with the building of sand clay roads, practically all of which have since been hard surfaced, and the total expenditure to date approximates \$5,807,000. Included in the expenditure is the new bridge over the St. Johns river at Astor, which cost \$133,700 and the Howey bridge over Little Lake Harris, which has just been opened to traffic, costing \$240,000.

Figures compiled showing the road building program during the past five years indicate expenditures of \$200,000 in 1922; \$800,000 in 1923; \$200,000 in 1924; \$1,000,000 in 1925; and \$3,000,000 in 1926.

Contractors are now at work on the last stretch of hard road leading out of this city, the short cut around the south side of Lake Minnehaha to Tampa. —Florida Engineer and Contractor.

THE MISSISSIPPI RIVER PROBLEM.

The problem of controlling the Mississippi river has been lost sight of in the enthusiasm following the various trans-Atlantic flights by airplane, but it continues to be the greatest engineering problem before the country. For more than one hundred years American engineers have been studying this problem, and, if it is solvable, they can be depended upon to solve it. Meanwhile many plans are being suggested by Congressmen and others who have only a superficial knowledge of what they are talking about. Take the parallel-channel advocates, for example. It seems on the surface a good scheme to control the river by digging parallel channels. However, an Arkansas engineer has submitted figures to the Engineering News-Record showing that the cost of two new channels large enough to take care of the surplus water would amount to \$189,838,537,776.—The Earth Mover.

TO SPEND MILLIONS ON SUPER ROADS.

Nearly \$200,000,000 will have been spent before 1928 by New York and New Jersey for perhaps the most ambitious program of traffic relief in the country. The program includes:

1. The \$40,000,000 twin tunnel system for vehicles under the Hudson, already completed and soon to be in operation.
2. Two express highways of the "super" variety, costing about \$75,000,000.
3. A bridge from New Jersey to Staten Island, \$15,000,000.
4. A high suspension bridge across the Hudson at Fort Lee, \$75,000,000.

When the Hudson vehicular tunnels are opened the first part of 1928, present congestion at ferry points will be relieved and traffic speeded up considerably.—The Nation's Highways.



F. A. Project 58—Road 1—Surface-Treated Lime Rock Base Between Monticello and Tallahassee.

Transactions at the Regular Quarterly Meeting of the State Road Department of Florida, Held at Tallahassee, July 12th, 1927.

The regular quarterly meeting of the State Road Department of the State of Florida was held in Tallahassee on the 12th day of July, A. D. 1927. All members were present, namely, F. A. Hathaway, Chairman, and E. P. Green, W. J. Hillman, J. Harvey Bayliss, and I. E. Schilling. There were also present, J. L. Cresap, State Highway Engineer; B. A. Meginniss, Attorney, and W. P. Bevis, Secretary.

The minutes of the regular quarterly meeting held at Tallahassee April 28th, 1927, were read, and on motion of Mr. Bayliss, seconded by Mr. Schilling, were duly approved.

Report of Chairman

The Chairman submitted his regular report of the operations of the Department since the last quarterly meeting.

Conner's Highway Purchase—Designation of Engineer

The Chairman called the attention of the members to the fact that the recent act of the legislature authorizing the purchase of Conner's Highway, directed the Department to designate one engineer to act as a member of the Board of Engineers under the provisions of the act.

Whereupon, Capt. Hillman nominated for the position, J. L. Cresap. The nomination was duly seconded by Mr. Green, and Mr. Cresap was unanimously designated as such Engineer.

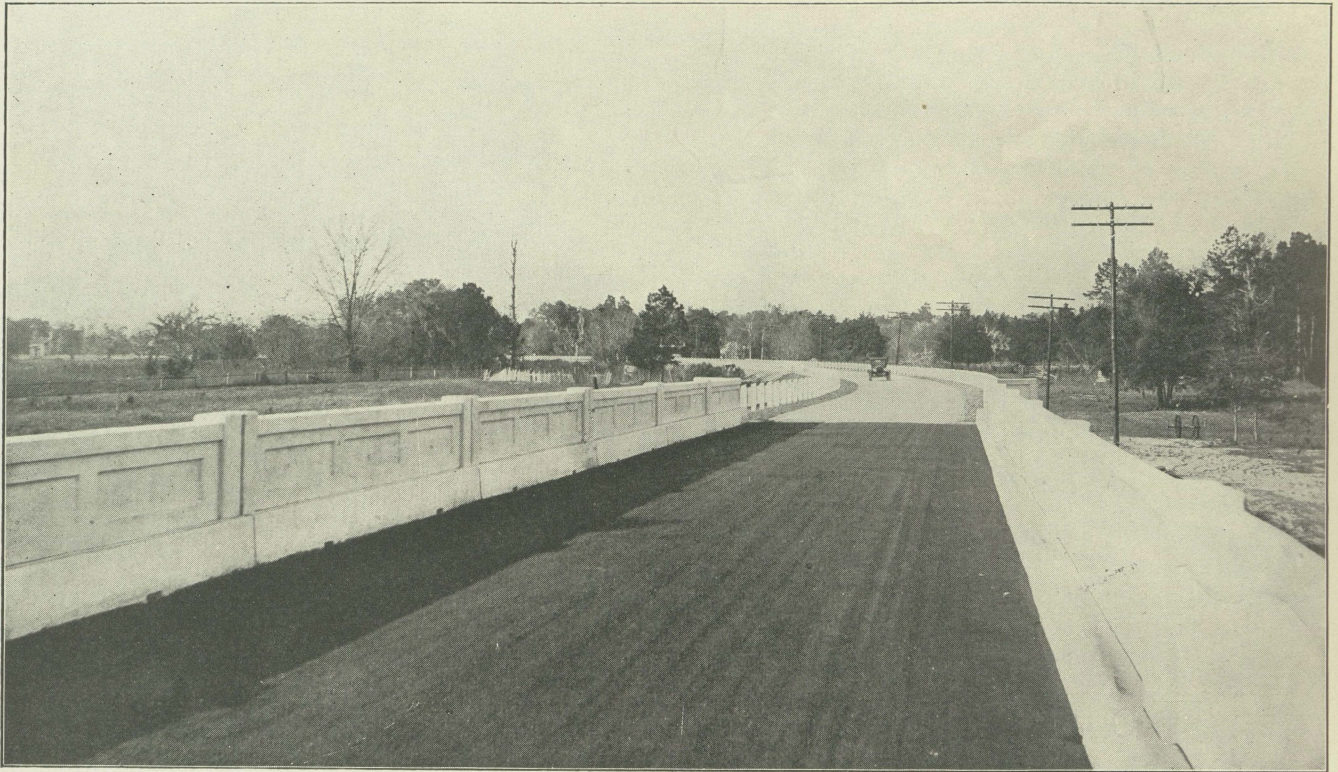
Salaries of Officers and Employees

The Chairman reported to the members that by an amendment to the General Appropriation Act passed by the recent Legislature, the members of the Department were authorized, by unanimous consent, and with the approval of the Governor, to raise any items of salaries applicable to the employees of the Department, provided that such increases should in no event exceed the amount of such salary as recommended to the Budget Commission by the Department, and provided that no such increases should result in an increase of tax millage.

Thereupon, Mr. Green introduced the following resolution which, on motion of Mr. Green, seconded by Mr. Schilling, was unanimously adopted:

WHEREAS, the Legislature of Florida, in the General Appropriation Act provided that the State Road Department by unanimous consent of its Members and with the approval of the Governor, may increase any items of salaries authorized for officials and employees of the Department, provided, that no such increase shall exceed the amount of such salary as recommended by the Department to the Budget Commission, as shown in its report to the Legislature, and provided further, that such increased salaries shall not result in an increase of tax millage, and

WHEREAS, such increases cannot result in an increase of the millage since none of the funds of the Department are received from tax millage, and



Looking West From Suwannee River Bridge—Road No. 1.

WHEREAS, it is the unanimous sentiment of the Members of the Department that the items of salary hereinafter mentioned should be increased to the amounts indicated, which said amounts are those recommended by this Department to the Budget Commission as shown by its report to the Legislature,

NOW, THEREFORE, BE IT RESOLVED unani-
mously by the Members of the State Road Department of the State of Florida, that the following items of salary be and they are, with the approval of the Governor, increased to the amounts per annum respectively designated, to-wit:

Assistant Highway Engineer	\$5,000	Per Annum
Office Engineer	3,600	" "
Bridge Engineer	4,200	" "
Asst. Bridge Engineer	3,300	" "
Designers, not over	2,100	" "
Division Engineers, (not over seven) each	4,200	" "
Stenographers, not over	1,800	" "
Auditor	3,600	" "
One stenographer-clerk, Auditor's office	1,800	" "
Asst. Superintendent of Equip- ment	2,700	" "

BE IT FURTHER RESOLVED, That the Governor be and he is hereby requested to approve the foregoing schedule and items of salaries, and that the Members of the said State Road Department in testimony of its unanimous consent to the increases herein made, do affix their proper signatures to this resolution.

BE IT FURTHER RESOLVED, That said increases shall be and become effective from July 1st, A. D. 1927.

Clay County—Road 48

A delegation from Clay County consisting of A. G. Shands, chairman, and J. E. Larson, member of the Board of County Commissioners of Clay County and Messrs. G. R. Wilson and F. M. Walrath appeared before the Department requesting that State Road No. 48 be taken over by the State for maintenance. The delegation was informed that the Department will take the request under consideration and advisement.

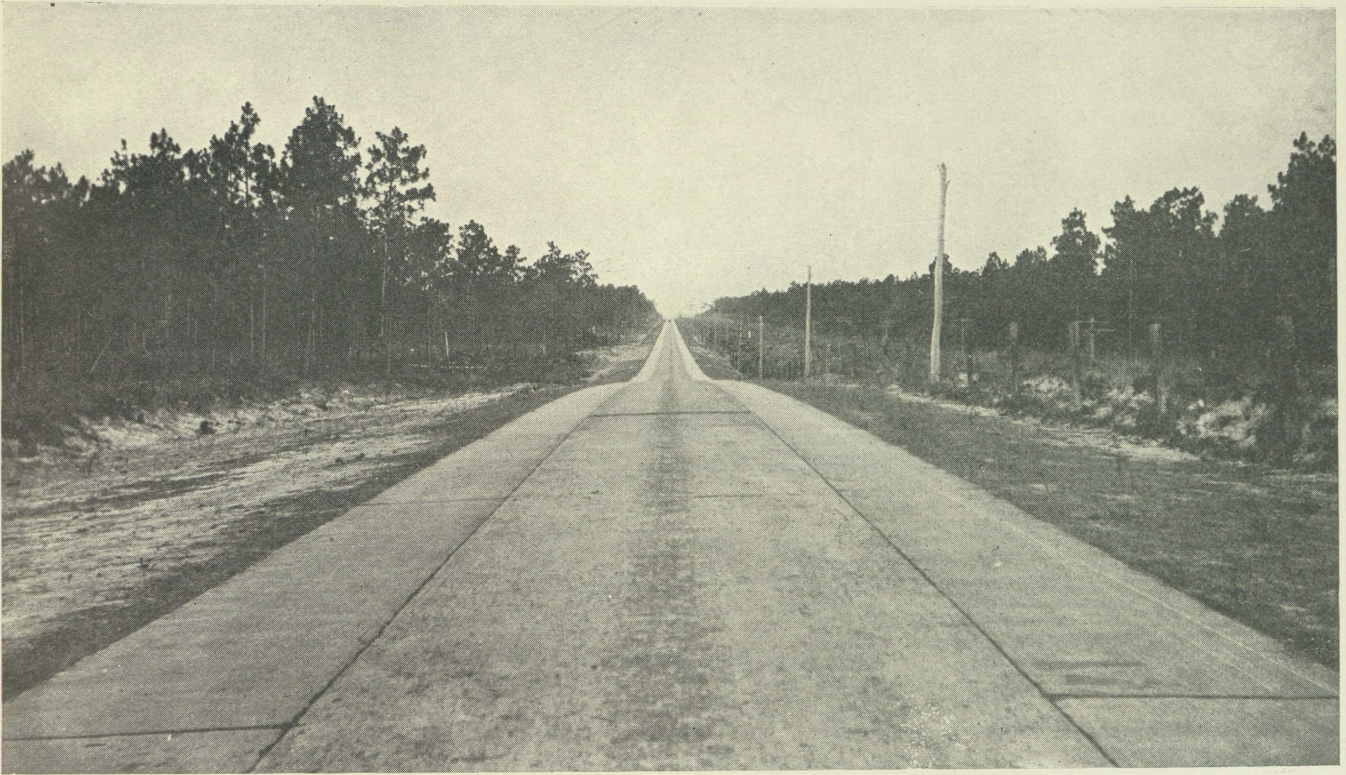
Hernando County—Road 15

A. B. Ensley, member of the Board of County Commissioners of Hernando County, Wm. O'Neill, Representative, and B. M. Clark presented to the Department the request of Hernando County that the Department assist the County in completing a stretch of approximately one and a half miles of Road 15 in said County. The Chairman told the delegation that the Department would take the request under consideration and advisement.

Hillsborough County—Road 17

A delegation from Hillsborough County consisting of W. T. Williams, chairman, and W. T. Watkins, member of the Board of County Commissioners, T. M. Shackelford, Jr., County Attorney, A. B. Pimm, County Engineer, and Mr. Wayne Thomas, and Dr. C. F. Young appeared before the Department with reference to the location of State Road No. 17 through Plant City, presenting a new suggestion that Baker Street be selected.

These gentlemen were advised that the Department will commence the construction of that portion of State Road 17 between Plant City and Tampa, as soon as the full right of way covering said stretch is furnished, and that it will further consider the matter of the location through Plant City.



Project 14—Road 1—Santa Rosa County—Showing Concrete Shoulders on Old Brick Pavement.

Upon motion of Mr. Schilling, seconded by Mr. Bayliss, the following resolution was unanimously adopted:

Resolved, That the matter of the location of State Road No. 17 through Plant City be referred to the Chairman and Mr. Green with full power to act.

Pinellas County—Roads 63 and 64

There was presented and read a certified copy of a resolution adopted by the Board of County Commissioners of Pinellas County, making request that the State take over for maintenance certain designated portions of State Roads 63 and 64 in said county. This request was supplemented by a delegation composed of S. J. Corey, member of the Board of County Commissioners, Karl B. O'Quinn, Clerk Circuit Court and C. E. Burleson, County Engineer. The matter was taken under consideration and advisement by the Department, and the delegation was so informed.

Sumter County—Road 23

S. W. Getzen, member of the House of Representatives from Sumter County, presented to the Department the request of that County that State Road No. 23 be taken over by the State for maintenance. The Chairman reported that he has inspected the road, as heretofore authorized, and recommends that the State take over for maintenance that portion of said road between Bushnell and the Marion County line, the recent Legislature having authorized the Department to take over and maintain the same.

On motion of Mr. Green, seconded by Mr. Bayliss, the following resolution was unanimously adopted.

Resolved, That the Department does hereby take over for maintenance that portion of State Road No. 23 between Bushnell and the Marion County line, this resolution to be effective when the Department has organized its forces for the purpose.

Taylor County—Roads 5-A and 19

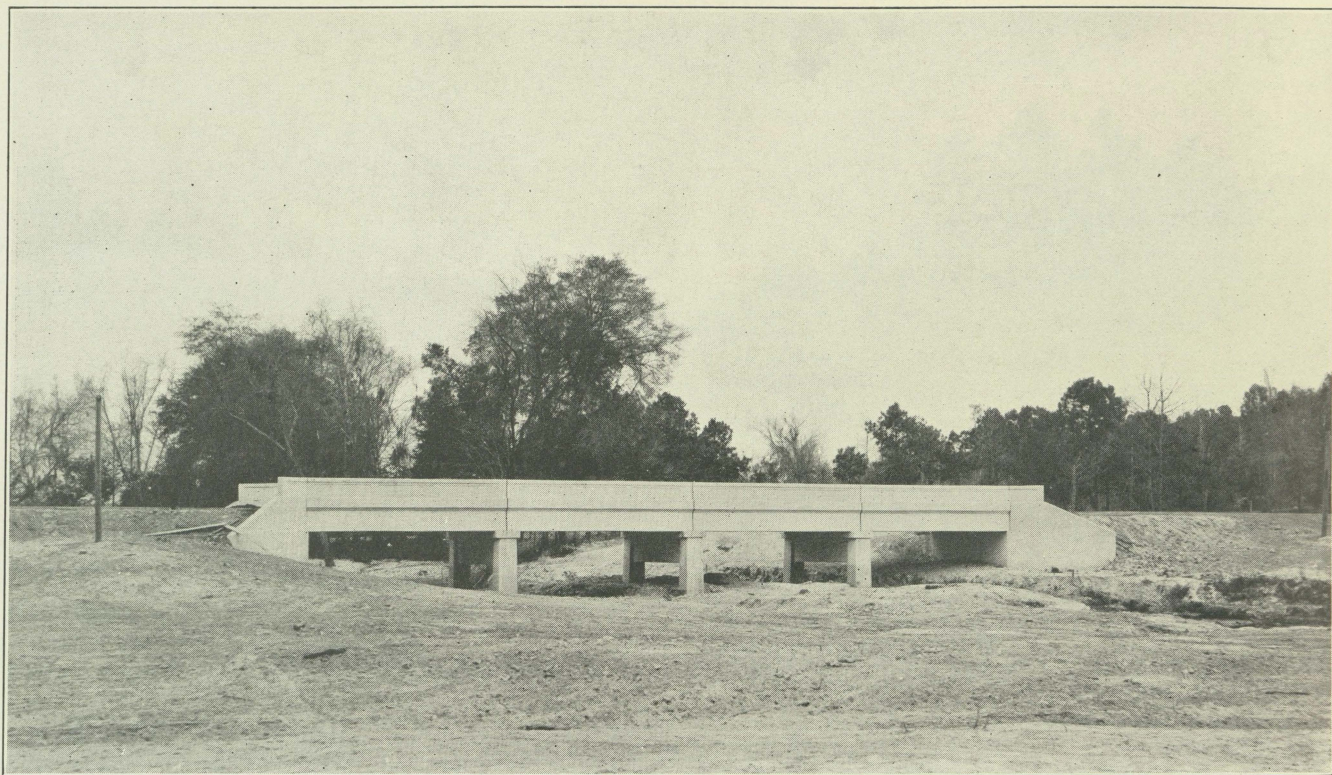
B. H. Lindsey, Chairman and W. L. Weaver, member of the Board of County Commissioners of Taylor County appeared before the Department and presented the request of that County that certain named portions of Roads 5-A and 19 in said County be taken over for State maintenance. These gentlemen were informed that the request will be taken under consideration and advisement.

Bay County—Projects 680 and 681—Bridges Over East and West Bay, St. Andrews Bay, On Road 10

At this juncture, L. E. Vickery, Chairman, G. P. Russ, J. M. Porter and J. C. Gainer, members of the Board of County Commissioners of Bay County, together with their attorney, J. Ed Stokes, joined the members of the Department, the Department having under consideration the matter of the award of contracts for the construction of Projects 680 and 681, being the bridges over East and West Bay on Road 10 in Bay County, bids on which were received July 7th. The members of said Board of County Commissioners had been invited to sit with the members of the Department on this occasion to advise with them with respect to said award, the funds for the construction of said bridges being supplied by Bay County.

The Department's engineers recommended the construction of Alternate No. 1, or concrete and steel structures throughout. This being the type favored by the members of the Department, the following resolution, offered by Mr. Schilling, seconded by Mr. Bayliss, was unanimously adopted:

Resolved, That the Department does hereby select and approve alternate No. 1 as the type of bridges to be constructed on Projects 680 and 681.



Concrete Bridge Near Chattahoochee on Road 1.

The members of the Department preferring the use of steel shell to sheet piling, and the same being also recommended by the engineers of the Department, on motion of Mr. Schilling, seconded by Mr. Bayliss, the following resolution was unanimously adopted:

Resolved, That steel shell be adopted for use in the construction of Projects 680 and 681.

The members of the Department declared their unanimous judgment that the period of time necessary for the completion of the work as inserted by each bidder in his bid is a material factor to be considered in arriving at a determination of the lowest responsible bidder, and that the item of time as inserted by each bidder is not subject to amendment after the opening of the bids.

It being noted that there was no time for completion of the work stated in the bid of Royce Kershaw, Inc., and C. G. Kershaw Contracting Company, on motion of Mr. Bayliss, seconded by Mr. Green, the following resolution was unanimously adopted:

Resolved, That it is found and determined that the bid of Royce Kershaw, Inc., and C. G. Kershaw Contracting Company, submitted July 7th for the construction of Projects 680 and 681 is irregular, and that the same be and it is hereby disregarded.

The Department thereupon heard from representatives of bidders on said projects as follows: George M. Drake, of Johnson, Drake & Piper, W. R. Collier, of U. G. I. Contracting Co., Alexander Allaire of Foundation Company, and B. H. Hardaway of Hardaway Construction Company.

The members of the Department having duly and carefully considered and analyzed the bids submitted July 7th for the construction of said projects, and having made full investigation, on motion of Mr.

Schilling, seconded by Capt. Hillman, the following resolution was unanimously adopted:

Resolved, That the Department does hereby find and determine after careful analysis of bids and full investigation, that Johnson, Drake & Piper of Miami Beach, Florida, is the lowest responsible bidder for the Department with respect to turning over to the across East Bay and West Bay, on Road 10, in Bay County, Florida, and

Be it Further Resolved, That contract for the construction of said bridges be and the same is hereby awarded to said Johnson, Drake & Piper at and for their bid, submitted July 7th, 1927, of \$1,772,143.80, and that the Chairman be and he is hereby authorized to execute said contract when the County of Bay shall have complied with all the requirements of the Department with respect to turning over to the Department the proceeds of its bond issue authorized for such purpose.

The members of the Board of County Commissioners of Bay County being present as aforesaid, and being polled, unanimously concurred with the Department in all its determinations, findings and actions as above set out.

Award of Contracts Ratified and Approved

On motion of Mr. Green, seconded by Mr. Schilling, the following resolution was unanimously adopted:

Whereas, Bids were asked by the Department for the construction of the projects hereinafter designated, and

Whereas, The firms and individuals respectively named were the lowest responsible bidders thereon, now, therefore,

Be it Resolved, That the action of the Chairman in awarding and executing the contracts hereinafter named, be and the same is hereby ratified, approved and confirmed, which said contracts are as follows, to-wit:

Proj. No.	Road No.	Contractor	County	Length Ft. Miles	Amount of Contract	Type
522	3	Langston Const. Co.	Nassau	4.06	\$39,449.79	R. B. S. T.
593	5	W. J. Bryson Paving Co.	Manatee	.66	10,962.02	Surf. Bridge
589	5	E. W. Parker	Lee	313	39,947.85	Conc. Bridge
691	4	Murphy & Pryor	Indian River	285	55,085.50	Overhead
687-A	2	Hayes & Kroeger	Lake	120	16,603.98	Overhead
614	5	E. W. Parker	Sarasota	165	45,755.00	Concrete Bridge
614	5	E. W. Parker	Sarasota	150	55,745.84	Concrete Bridge
614	5	E. W. Parker	Sarasota	130	48,664.45	Concrete Bridge
614	5	E. W. Parker	Sarasota	130	69,009.25	Concrete Bridge
49	4	Cone Bros. Const. Co.	Flagler	13.81	229,269.15	R. B. S. T.
691	4	Fowler & Banko, Inc.	Indian River	5.52	150,331.23	Conc. Pavement
692	4	Fowler & Banko, Inc.	St. Lucie	7.38	208,184.08	Conc. Pavement
41-B	4	General Const. Co.	Dade	132	36,844.60	Conc. Bridge
716	28	F. X. Bradley & Co.	Bradford	11.12	51,840.78	C. G. & G.
717	28	F. X. Bradley & Co.	Bradford	10.93	78,031.48	C. G. & G.
50-B	14	L. M. Gray	Putnam	9.77	144,382.72	R. B. S. T.
50-C	14	N. C. Cash	Putnam	10.03	161,842.66	R. B. S. T.
619	5	C. R. Scott	Alachua	9.28	122,155.20	R. B. S. T.
6	1	Higgison Const. Co.	Madison	5.45	43,155.88	C. G. & G.
55	14	W. J. Bryson Paving Co.	Alachua	16.77	129,345.46	C. G. & G.
697	1	Harrison & Estes	Escambia	.143	8,193.65	C. G. & G.
706-A	28	Franklin Construction Co.	Putnam	12.09	75,970.52	C. G. & G.
714	28	W. J. Bryson Paving Co.	Union	10.20	60,915.36	C. G. & G.
715	28	Sellers Const. Co.	Union	3.20	18,866.02	C. G. & G.
742	14	Little & Lee	Alachua	7.65	36,148.15	C. G. & G.
764	50	F. W. Simpson	Suwannee	12.00	47,846.39	C. G. & G.
765	50	F. W. Simpson	Suwannee	7.00	27,662.63	C. G. & G.
677-A	13	Duval Engr. & Contr. Co.	Levy	6.96	80,589.44	R. B. S. T.
53-B	2	W. J. Bryson Paving Co.	Lake	570	87,665.44	Conc. Bridge
719	5-A	C. G. Kershaw Contr. Co.	Suwannee	8.57	36,686.69	C. G. & G.
53-B	14	American Bascule Bridge Corp.	Lake		14,974.00	Bascule Span

Members' Expense Accounts

On motion of Mr. Schilling, seconded by Mr. Green, the expense accounts of the members were approved and ordered paid.

There appearing no further business, the Department was adjourned.

A woman shopper approached the postoffice clerk at the stamp window.

"I would like to look at your red two-cent stamps," she said.

The clerk obligingly brought out a sheet of 100 or more stamps. Pointing to one of the stamps in the center of the sheet, his discriminating customer sweetly said, "I'll take that one."



Project 634—Road 1—Jackson County—Surface-treated Sand-Clay.



Project 621—Road 1—Sand-Clay Surface near Crestview.

Closing the Gaps

By THOS. H. MacDONALD

Chief of the U. S. Bureau of Public Roads

APPROXIMATELY 26,000 miles is the estimate of the roads to be constructed this year under the supervision of the State Highway Departments. Probably more than 21,000 miles will be on the Federal aid highway system, and somewhat less than half of this improvement will be carried on with Federal aid. The year's addition to the Federal aid system will bring the mileage of that system initially improved up to practically 150,000 miles, leaving only 35,000 miles of the roads thus far designated to be constructed in order to complete the initial improvement of the system.

More rapidly than most of us realize the main highway system of the United States is being brought to a condition of continuous improvement. We are still a long way from the condition that will ultimately be required but we are moving toward it at a surprisingly rapid rate. Roads we are now improving with gravel and other low-type surfaces will eventually have to be further improved. Narrow present surfaces will need widening; bridges which suffice for the present will need replacement; grade crossings tolerated in the initial improvement must be later eliminated; and the whole system as originally constructed must be combed over to root out of it the danger places, the congestion breeders, and the failures of one sort or another inevitable in a construction work of such magnitude. These are refining processes and they will continue indefinitely; but the fact remains that we are now rapidly approaching the time when we shall have a continuous network of main state and interstate arteries improved throughout to

some degree at least, and all of it under maintenance by the State Highway Departments.

Some idea of the present condition can be gained from the logs of the United States highway system now being compiled. Take Route 40, for example, the mid-continent route which runs from Atlantic City to San Francisco. Westward from its eastern terminus this road passes through Wilmington, Baltimore, Wheeling, Columbus, Indianapolis, St. Louis, Kansas City, Topeka and Manhattan, Kansas, at which point it divides into 40 north and 40 south and takes the two courses to Limon, Colorado. From Atlantic City to St. Marys, Kansas, just beyond Manhattan on 40 north, a distance of 1,302 miles, there is continuous pavement. The bells of St. Marys signal the end of the hard surface, but portend no great difficulty for the traveler. The pavement ends but the road beyond through Limon, Denver, Salt Lake City, Elko, Nevada, and Auburn and Sacramento, California, to San Francisco, is mostly gravel surfaced and graded, with pavement again from Auburn to the terminus, and even the small mileage unimproved is for the most part under efficient blade grader maintenance. Cataloging the present condition of this road we find that 51 per cent of its 3,220 miles is paved, 15 per cent is gravel surfaced and the remainder is graded and drained or unimproved.

Route 30 from Atlantic City to Portland, Oregon, is improved to a somewhat higher degree. This route, which coincides with the Lincoln Highway from Philadelphia to Granger, Wyoming, and follows very closely the line of the old Oregon Trail in the West



Hillman Bridge Over Suwannee River—Road 1.

is 3,450 miles long. It is approximately 88 per cent surfaced with gravel, bituminous macadam or the higher types of pavement.

Down South the combination of Route 90 from Jacksonville to Van Horn, Texas and Route 80 from Van Horn to Los Angeles takes one across the continent with a journey of 2,640 miles. The route follows closely the line of the Old Spanish Trail and some of its sections are perhaps the oldest roads in the United States, going back as they do to the Spanish occupation of Florida and the Southwest.

Much of this line in Florida is already paved, and the balance now surfaced with sand-clay is scheduled for immediate paving. In Alabama there is approximately 33 miles of unimproved road which is being relocated to conform to the line established by the Mobile bridge. Across Mississippi the 91 miles involved is constructed of gravel with intermittent paving in the vicinity of the cities. In Louisiana a similar condition obtains for the entire 340 miles unless portions have been destroyed by the Mississippi flood. In eastern Texas an extensive paving program has been in progress for four years and is being continued. In West Texas the first serious obstacle is encountered in a considerable mileage of dirt road, maintained by county authorities, which is difficult, if not impassable, after protracted rains. In New Mexico the line is improved with gravel throughout except possibly 30 miles west of Masilla Park, which is under construction; and the rest of the way across Arizona and California the route is surfaced for the entire distance with gravel, plain or surface-treated, or pavement to Los Angeles.

The east coast route No. 1, from Fort Kent, Maine, to Miami, is approximately 76 per cent improved with sand-clay, gravel, bituminous macadam or high-type pavements, and much of the unimproved earth road—all in the South—is included in the 1927 construc-

tion program. It is reasonable to expect that the entire line will be completed as an all-weather route in time for the annual Florida travel next fall.

Route 11, which runs from Rouses Point, New York, to New Orleans, is 98 per cent surfaced with some kind of surfacing varying from sand-clay to pavement, and the 2 per cent remaining will be completed in 1927. This route passes through Syracuse, Scranton, Harrisburg, Hagerstown, Martinsburg, Winchester, Bristol, Knoxville, Chattanooga, Gadsden, Birmingham, Meridian, and Hattiesburg; and is continuously improved with gravel, sand-clay, macadam, or higher types of surfacing from the Canadian border to the Georgia line.

Mentioning only one more of the main through routes—and that the most completely improved of all—there is Route 99, the Pacific Highway, which runs from the Canadian boundary, near Blaine, Washington, to Los Angeles. This road is completely improved throughout with high-type pavements except for approximately 100 miles, which is improved with surface-treated gravel, immediately south of the Oregon line, and much of this section, I understand, is now being further improved. In combination with a section of Route 101, from Los Angeles to the Mexican border, this route is 1,569 miles long, and it is perhaps the longest continuous stretch of surfaced road in the United States.

These are only a few of the main through routes which are already far advanced in improvement. I have described their present condition, not with the thought of furnishing a guide for tourists but merely to indicate how near we have come to a condition of continuous improvement. As the improved sections of the through routes begin to draw together, the tendency, rather strong in the early stage of improvement, to scatter construction, is supplanted by the desire to fill in the gaps of the main roads and thus



Project 38—Road 1—Escambia Bay Fills Showing Surface Treatment on Sand-Clay.

complete the through connections. The designation of the Federal aid and State systems and more recently the United States system has operated to center attention and effort on the improvement of the roads in each State which contribute most directly to a connected interstate system and serve the greatest numbers of people. The conception of a connected system is now firmly implanted in the minds of the highway authorities; and the influence of the Federal Government has recently been directed even more strongly toward such a concentration of effort. The next two or three years should see an intensive campaign to fill in the missing links, and we may confidently expect that by 1930 the totally unimproved sections of the principal through routes will be extremely rare if not absolutely non-existent.

These Interstate and State routes are the trunk lines which carry the flood of traffic that flows between our principal cities. Into them there comes also a heavy volume of traffic from innumerable lateral connections serving a tremendous back country. Their construction and maintenance is financed through the public revenues—largely the direct contributions of the motorists and truckers who use them. On the roads themselves the traveler is rarely asked to pay toll; but the situation with respect to the bridges is somewhat different.

The heavy flow of traffic concentrated on the State and Federal aid roads and the public disposition to provide properly for the traffic are being capitalized by private corporations which obtain franchises permitting them to construct and operate toll bridges. In many cases the income from the tolls charged on these bridges—so heavy has the traffic become—is sufficient to pay the cost of construction in four or five years; yet the franchises under which they are built and operated often permit their owners and

assigns to collect tolls indefinitely—forever if they wish.

There are cases in which the person or corporation originally granted a franchise holds it for speculative purposes only. The bridge is not built immediately but the right to build it remains with the holder of the franchise and none other until the increase in traffic resulting from the improvement of the approach roads at public expense gives high value to the bridge right, and it is sold for a large figure, all of which is clear gain to the original holder.

This is an utterly indefensible situation from every point of view, and the unlimited franchise, even when used in a straightforward manner to provide needed bridge facilities, is scarcely more justifiable from the public standpoint. The need for bridges on important highways and the heavy expense entailed by their construction is an expense which is concentrated at a single point; these facts are in many cases sufficient justification of the financing of the bridge by tolls collected only for a sufficient period to pay the cost of the bridge. A number of bridges have been constructed under various forms of this method, the tolls being collected in some cases by the construction company and in others by the public authority. There can be no great objection to this method which has built numerous necessary bridges which otherwise could not have been built.

The passage of the Oldfield bill at the last session of Congress provides a desirable means, hitherto lacking, whereby the Federal Government may assist the States in the construction of toll bridges on the Federal aid highway system. Under the new authority granted, the Federal Government may contribute one-half of the cost of construction and the State may finance the remainder by means of tolls publicly collected for a sufficient period.

This arrangement should make possible the con-



Concrete Pavement—State Road No. 1.

struction of bridges at points where heretofore the lack of available funds and an unwillingness to saddle a burden upon the future traffic for the enrichment of a toll bridge company have prevented the building of badly needed structures. It may now be hoped that the construction of such bridges will proceed at a rate fully consonant with the improvement of the roads of the system.—The Highway Magazine.

THE HIGH COST OF PICNICS.

“Litter-pests,” the folks who leave lunch boxes, paper, melon rinds, old tires, tin cans, and other refuse along the road, cost the state of Delaware over \$1,500 during 1926. A bi-monthly collection service, administered by the maintenance department, spent that much cleaning up such litter during the year.—Engineering and Contracting.

HIGHWAY ACCIDENTS

A survey made recently shows that 100,000 persons have been killed and 3,000,000 injured in highway accidents during the last five years—one casualty every forty-two seconds—and that 30,000 of those killed have been children.

Highway and city engineers are endeavoring to make accidents difficult by widening roads and streets, eliminating grade crossings, removing blind and dangerous curves, but they need public support.—Concrete Highways and Public Improvements.

Post-Mortem Joy

“Lots of people commit suicide so they can see their names in the paper,” according to Professor Norcross.—The Dickinsonian.

THE ENGINEERS VOW OF SERVICE

(Editor’s Note: The following “Vow of Service” has been promulgated by the American Association of Engineers. We submit it without undue and, perhaps, unseemly comment.)

We dedicate ourselves to the service of mankind as members of the Engineering Profession.

We consecrate our professional knowledge, skill, and training to the advancement of human welfare, safety and progress.

As we benefit by the technical knowledge and public esteem won for the profession by the Engineers who labored in the past, we shall ever strive to augment that heritage before passing it on to the Engineers who are to follow.

We therefore affirm our guiding purpose:

So to live and work as to strengthen the Public’s esteem for the Engineering Profession, and to justify the trust and confidence reposed in us as members of that Profession.

To carry out professional engagements with generous measure of performance, and with fidelity and loyalty toward those who engage our services.

To foster a spirit of courteous consideration and fraternal cooperation within the Profession.

To extend encouragement and a helping hand to younger Engineers and to those in need.

And always to place Service before profit, the honor and standing of the Profession before personal advantage, and the Public Welfare above all other considerations.—Municipal and County Engineering.



Yellow River Bridge—Road 1—Okaloosa County.

Prize-Winning Plans for Super-Highway

**Progressive Stage Construction, Suggested by R. E. Toms, District Engineer, U. S. Bureau of Public Roads
Montgomery, Ala., Wins First Prize in Nation-Wide Contest**

THE principal idea embodied in the plan by R. E. Toms, District Engineer, U. S. Bureau of Public Roads, Montgomery, Ala., for the super-highway fostered by the Metropolitan Super-Highway Association of Du Page, Cook and Kane Counties, Chicago, Ill., is progressive construction. Mr. Toms was recently awarded the first prize of \$1,000 in the nation-wide contest for the best plans for the construction of 200-foot-wide super-highways to serve Chicago's metropolitan area. His plan will be followed in the construction of the three proposed 200-foot-wide super-highways to connect Cook County with the Fox River Valley. The principle of progressive construction is also carried out with regard to highway grade separation and railroad grade separation.

Preliminary Stage

The construction of a single traffic unit of a 20-foot roadway on one side of the center of the right-of-way in a location where it would be utilized in succeeding stages, will constitute the preliminary stage of construction. This unit has been located nearest to future sidewalk construction in preference to a location nearer the center of the right-of-way, in order to provide easier access from adjacent property.

First Stage

The second traffic unit, consisting of one 20-foot roadway, is indicated to be construction on the opposite side of the center line of the right-of-way from the original construction. This plan is believed to

be better than to construct the second traffic unit of 20-foot roadway adjacent to the first unit constructed, for the reason that construction on the opposite side of the center line will tend to encourage property development equally on both sides of the right-of-way instead of on one side. Opinions differ in regard to the traffic-carrying capacities of two separated roadways as compared with the capacity of a roadway equal to the total width of the separated units. The plan submitted is sufficiently flexible, however, to permit either procedure.

The first stage of sidewalk construction, consisting of a 5-foot width of walk adjacent to the right-of-way line, is indicated for construction in this stage at such points as may be necessary.

Planting is to be undertaken in this stage along all sections of the improvement where the grading operations for work in successive stages will not damage the shrubs or trees. Low shrubbery is indicated for the outline of the center parkway, while shade trees would be used in the planting system adjacent to the sidewalks.

Second Stage

For balanced service, the second stage of improvement requires the addition of a 20-foot roadway on each side of the center line of the right-of-way adjacent to the construction done in the preceding stages. Shoulders of ample width are indicated for parking, and provision is made for gravel shoulders in front of all residences or developed sections of the highway in order that the full width of paving con-



F. A. Project 38—Escambia Bridge. View of 200-ft. Steel Swing Span. This bridge was opened to traffic July 8th, 1926, and stretches three and one-half miles across Escambia Bay.

struction may always be available for traffic-carrying purposes. Provision is also made in this stage for the extension of the sidewalk width to 10 feet or the construction of a second unit of 5-foot walk in locations where this width is necessary.

Public utilities are to be added during this stage and extended as property development required.

Final Stage

The final stage of the improvement contemplates its location through a closely built-up residential section or a highly developed business district. In the closely built-up residential section, a curb and gutter has been added and the pavement extended in order to provide for parallel parking adjacent to the curb. In the highly developed business district, the sidewalk widths have been extended to 15 feet, a curb and gutter added, and the entire width between curb and gutter and original roadway paved. This provides a paved width of $17\frac{1}{2}$ feet which would be used for diagonal parking and for truck deliveries. This width will permit trucks to back to the curb for loading and unloading without obstructing the normal flow of traffic on the main portion of the highway.

Highway grade separation will be accomplished in the final stage or any preceding stage at points where the volume of cross-traffic would endanger the traffic on the super-highway or materially reduce its carrying capacity because of the necessity of stopping traffic to permit cross-traffic.

Economic Construction

An outstanding feature of the plan submitted is its economic construction. Nothing need be constructed in advance of actual need, and nothing once constructed will be destroyed or fail to be utilized in the final improvement. There will be no large initial financial burden for the construction of a finished project. Construction can be undertaken as funds are available and traffic needs require. The principle of unit construction is employed throughout. Sidewalks are constructed in 5-foot units, roadways are constructed in 20-foot units. Gravel shoulders are used for parking, and give way to the construction of additional pavement and curb and gutter only when development justifies this procedure. Railroad grade separations are accomplished by unit construction in which the first unit is used throughout the preliminary and final stages of the super-highway development. At no stage in the proposed development will capital be tied up in what might be considered as unproductive investment. At no stage of its progress will the project be over-built.

Public Utilities

Provision is made for sewer, gas, water, and conduits for wiring and telephone service. These utilities are located so that during all stages of development openings for service connections and repairs can be made without tearing up any portion of the pavement originally constructed. This condition obtains up to the final stage of development in the



Florida Rock Base—Road No. 1—Columbia County.

business district, where, on account of the desirability and necessity for increased sidewalk width and space for parking and delivery service, it will be necessary to pave directly over the utilities. In this latter case, however, openings for service connections and repairs will cause inconvenience only to parking and truck delivery and will not cause any interference with the normal movement of traffic on the main body of the highway.

Highway Grade Separation

The highway grade separation is a detail in the general plan which is essential if the maximum value in traffic service is to be received from the investment in the construction of wide highways. The purpose of the super-highway is to provide unexcelled traffic service. This can be accomplished only by permitting the fewest possible obstacles to the free movement of traffic over these wide highways. The highway grade separation plan submitted contemplates a gridiron development of approximately one city block on either side of, and perpendicular to, a highway grade separation structure. The method of handling traffic across this highway grade separation structure will be almost identical to the handling of traffic at grade in cities and intersections where no turns are permitted. Traffic desiring to cross the super-highway or to make a crossing at grade will use the overhead structure. It is a scheme which is unusually simple, practical, and flexible. Its first use will ordinarily be at intersections with section line roads. There ordinarily is some community development at these locations and it will be a comparatively simple matter to develop the gridiron system which will be necessary in order to separate the highway grades. The width of the highway grade separation structure will vary according to the volume of cross-traffic which will have to be accommodated. The

width, however, should not occupy more than 30 to 40 per cent of the pavement width of the cross-street, so as to permit street-level access to stores and houses on the cross-street. For ordinary crossing, a 20-foot width of roadway will probably be all that will be necessary. In this connection, provision will also be made for cantilever sidewalks and stairs to and from the ground sidewalk, so that pedestrian traffic as well as vehicular traffic will use the straight super-highway overhead. When this stage is reached, there would be no crossing of the super-highway at grade, and the two inside lanes of motor traffic nearest the center line of the right-of-way can be utilized for high-speed traffic in which the mechanical perfection of the vehicle and the skill of the driver will regulate the speed. The third lane will be used for medium-speed traffic for automobiles and trucks, the fourth lane for low truck traffic. Traffic desiring to turn to the right off the super-highway will first maneuver into the medium-speed traffic lane, thence to the slow-truck lane or, if the slow truck traffic permits, will cross the truck lane from the medium-speed traffic lane in turning to the right. The safety feature of such a scheme cannot be over-emphasized. The location of grade separation structures will be determined by the amount of cross-traffic. When property adjacent to the super-highway reaches a stage of development extending for several blocks on either side, it may be necessary to construct highway grade separations every sixteen, eight, or four blocks. The scheme is sufficiently flexible so that structures of this character can be used every second block if required in handling the traffic.

Railroad Grade Separations

The principle of unit construction is followed throughout the construction of railroad grade sep-

(Continued on Page 18)

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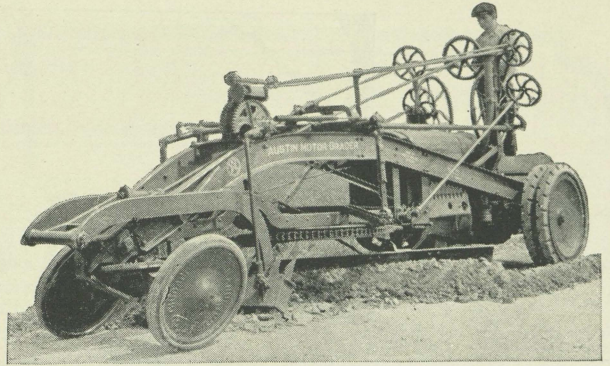
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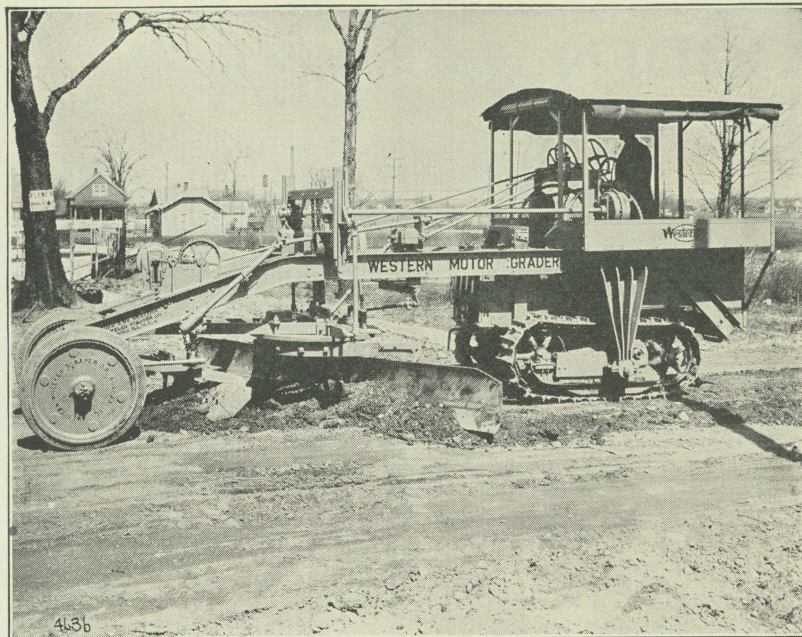
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MOTOR GRADER ATTACHMENT FOR CATERPILLAR TRACTOR

An illustrated bulletin recently issued by the Austin-Western Road Machinery Company, 400 North Michigan avenue, Chicago, describes the Western motor grader attachment for the two-ton Caterpillar tractor.

This grader has a strong and rigidly-braced main frame which is attached to the tractor at its exact pivotal point, allowing the tractor freedom of movement, without affecting the work of the grader blade.

The front axle is of the well-known Detroit Timken type used on many of the highest grade motor trucks.

Disc type, cast iron wheels fitted with Timken Tapered Roller Bearings, fully enclosed in dust-proof housings, are regular equipment. Thirty-four inch by five-inch rubber tires are pressed on the wheels.

Wrought steel wheels with staggered spokes and expansion rims are furnished on special orders, and when so furnished reduce the total weight of the outfit

approximately 460 pounds. The tread of the front wheels is 60 inches.

The steering mechanism is of the type used on heavy duty motor trucks, with Ross non-reversible steering gear, and Blood Bros. universal joints. The steering wheel is 20 inches in diameter.

The blade lift is of the worm gear type, with 34-inch hand wheels operating cut steel worms and worm gears which run in oil baths in dust-proof housings. At the forward ends of the horizontal side shafts are spur gears operating control racks, which are connected to the blade-lifting arms by ball and socket joints, and as ball and socket joints are also provided at the lower ends of the lifting arms there is no chance for lost motion to develop anywhere in the entire blade-raising mechanism.

The Austin-Western Road Machinery Company maintains offices and warehouse at 345 Whitehall street, Atlanta, Georgia; general offices at 400 North Michigan avenue, Chicago, Illinois.

PRIZE-WINNING PLANS FOR SUPER-HIGHWAY

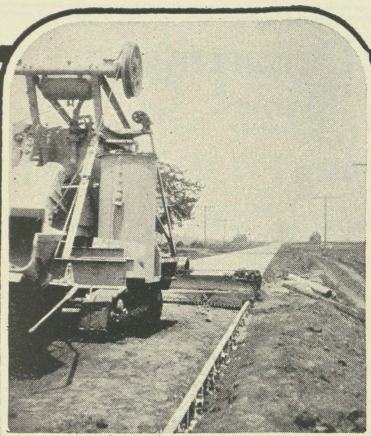
(Continued from Page 16)

aration. Economy in first cost is also the dominating feature, as it will be difficult to enlist the cooperation of the railroad companies in the construction of separations of much greater width than will be immediately necessary to provide for the highway traffic. The first unit of the grade-crossing structure will provide for a single plate girder span of approximately 65 feet on concrete open-end bents with creosoted timber trestle approaches. The initial grade-separation structure of this plan will accommodate two 20-foot roadways and eventually will be used as a unit in the final grade separation structure when the entire 200-foot right-of-way is developed to its final stage. Traffic utilization of this structure by the second 20-foot unit of construction located on the opposite side of the right-of-way of the super-high-

way will be accomplished by introducing a jog into the alignment in the vicinity of the underpass so as to utilize the underpass opening. Curves of 400 to 500 feet radii could be utilized in making this jog. When the construction of two additional traffic units of 20-foot roadway becomes necessary, a duplication of the first unit of railroad grade separation will be required on the other side of the center line of the right-of-way. When this is accomplished, the pavement forming the two curves of the jog will have to be removed.

Conclusion

The plan submitted is intensely practicable, economically sound, and highly flexible. The principle of progressive stage construction should be particularly appealing to communities which have not at hand sufficient funds to undertake in one operation the construction of a finished improvement on a scale to which the modern super-highway should be built.—The American City.

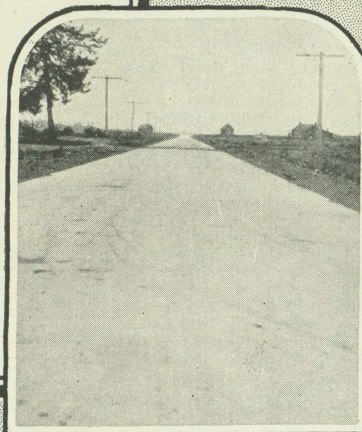


Federal Aid Concrete Road in South Georgia

HERE'S a big Federal Aid project (F. A. P. 100-A)—a four-mile concrete highway between Sasser and Dawson—in which the contractors (Hopper & Winston of Montgomery) are using

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exclusively as coarse and fine aggregate. Federal Aid officials are cooperating wisely in this time-tested type of hard surface highway. The contractors were equally confident in entrusting their aggregate problems to Arrowhead.



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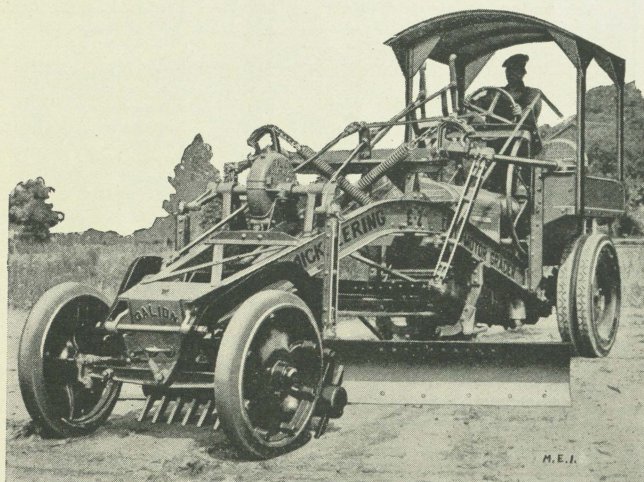
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Contracts Awarded by State Road Department

January 1st, 1927, to July 20th, 1927

Contractor—	Project No.	County—	Length Miles	Length Feet	Contract Plus 10%	Type
Noonan-Lawrence	54	Leon	13.00	—	\$ 385,297.67	Concrete
Higgison Const. Co.	59	Leon-Jefferson	9.10	—	266,653.37	Concrete
Duval Engr. & Contr. Co.	54-A & 58	Leon-Jefferson	12.53	—	264,524.48	R. B. S. T.
Manley Construction Co.	53-A	Lake	7.10	—	249,034.28	Asph. Concrete
W. J. Bryson Paving Co.	52	Escambia	10.089	—	241,904.49	C. G. & G.
Boone & Wester	677-C	Levy	10.16	—	224,345.88	C. G. & G.
Thompson & Moseley, Inc.	677-D	Levy	7.58	—	66,017.34	C. G. & G.
Lake Worth Const. Co.	683-C	Palm Beach	8.27	—	44,290.95	C. G. & G.
B. Booth & Co.	687-B	Lake	15.22	—	89,496.93	C. G. & G.
C. T. Dawkins	50-A	Putnam	—	120.0	22,243.32	Conc. Overhead
Okeechobee Const. Co.	655-667	Highlands	—	815	50,006.45	Timber
C. H. Turner Co.	697	Escambia	—	488	22,911.53	Timber
Duval Engr. & Contr. Co.	571	Madison	14.26	—	47,190.03	S. T.
Langston Const. Co.	660	Clay	10.52	—	33,538.07	S. T.
H. E. Wolfe	48	St. Johns	15.39	—	371,253.82	R. B.
Nelson Brothers	694	Martin	8.48	—	275,185.30	Concrete
Johnson, Drake & Piper	693	St. Lucie	8.93	—	312,662.92	Concrete
Concrete Steel Bridge Co.	665	Clay	—	1,400	208,167.96	Concrete
Concrete Steel Bridge Co.	664	Clay	—	1,600	236,366.90	Concrete
Royce Kershaw, Inc.	640-B	Martin	—	131	32,201.40	Concrete
F. M. Stuart & Co.	40-B	Brevard	—	108	40,149.91	Concrete
Langston Construction Co.	641	Palm Beach	9.67	—	188,279.21	R. B.
Samuel Vadner	695	Lake	10.50	—	63,734.69	C. G. & G.
Tampa Sand & Shell Co.	695	Lake	—	—	63,368.28	Hyd. Fill
R. C. Huffman Const. Co.	669-D	Dade	12.30	—	382,038.36	C. G. & G.
Deen, Yarborough & Ebersbach	685	Franklin	17.43	—	159,980.86	C. G. & G.
Wm. P. McDonald Const. Co.	648	Hardee	7.14	—	24,075.97	S. T.
L. M. Gray	676-A-B	Levy	24.35	—	80,637.57	S. T.
West Construction Co.	614	Sarasota	17.34	—	483,586.35	Bit. Conc.
Manley Construction Co.	687-A	Lake	15.00	—	436,551.76	Sheet Asph.
M. C. Winterburn, Inc.	543	Seminole	14.20	—	405,296.30	Bit. Mac.
Wm. P. McDonald Const. Co.	648	Hardee	6.36	—	123,804.83	R. B. S. T.
Duval Engr. & Contr. Co.	659	Clay	2.80	—	49,310.97	R. B. S. T.
C. A. Steed & Sons Co.	668	Brevard	13.45	—	373,640.32	R. B. S. T.
Stidham & Hughes	564-C	Charlotte	3.93	—	81,173.55	R. B. S. T.
H. L. Clark & Sons Co.	676-C	Levy	15.01	—	227,110.22	R. B. S. T.
F. A. Bradley & Co.	573-D	Orange	16.81	—	95,642.25	C. G. & G.
C. A. Henderson	713	Columbia	10.00	—	85,284.71	C. G. & G.
James Betteridge	41-B	Dade	—	88	42,387.84	Concrete
Peterson & Earnhart	698	Leon	—	400	34,773.06	Concrete
Peterson & Earnhart	699	Jefferson	—	390	27,441.17	Concrete
John J. Quinn, Inc.	641	Palm Beach	1.00	—	52,494.31	S. T.
Bd. Co. Commrs., Taylor Co.	745	Taylor	14.00	—	12,320.00	C. & G.
Finlayson & Morris	747	Jefferson	6.50	—	40,566.79	C. G. & G.
C. S. Maulsby	694	Martin	—	—	10,780.00	Protection
Kibbey Engineering Co.	663-679	Citrus-Hernando	15.00	—	19,145.28	Guard Rail
Alexander, Ramsey & Kerr	669-E	Dade	4.27	—	205,700.00	C. & G.
Langston Const. Co.	522	Nassau	4.06	—	43,394.76	R. B. S. T.
W. J. Bryson Paving Co.	593	Manatee	0.66	—	12,058.22	Bit. Conc.
E. W. Parker	589	Lee	—	313	43,942.63	Concrete
Murphy & Pryor	691	Indian River	—	285	60,594.05	Conc. Overhead
Hayes & Kroeger	687-A	Lake	—	120	18,264.37	Conc. Overhead
E. W. Parker	614	Sarasota	—	165	50,330.50	Conc. Bridge
E. W. Parker	614	Sarasota	—	150	61,320.42	Conc. Bridge
E. W. Parker	614	Sarasota	—	130	53,530.89	Conc. Bridge
E. W. Parker	614	Sarasota	—	130	68,210.17	Conc. Bridge
Cone Bros. Const. Co.	49	Flagler	13.81	—	252,196.06	R. B. S. T.
Fowler & Banko, Inc.	691	Indian River	5.52	—	165,364.35	Concrete
Fowler & Banko, Inc.	692	St. Lucie	7.38	—	229,002.48	Concrete
General Const. Co.	41-B	Dade	—	132	40,529.06	Conc. Bridge
F. X. Bradley & Co.	716	Bradford	11.12	—	57,024.85	C. G. & G.
F. X. Bradley & Co.	717	Bradford	10.93	—	85,834.62	C. G. & G.
L. M. Gray	50-B	Putnam	9.77	—	158,820.99	R. B. S. T.
N. C. Cash	50-C	Putnam	10.03	—	178,026.92	R. B. S. T.
C. R. Scott	619	Alachua	9.28	—	134,370.72	R. B. S. T.
Higgison Const. Co.	6	Madison	5.45	—	47,471.46	C. G. & G.
W. J. Bryson Paving Co.	55	Alachua	16.77	—	142,280.00	C. G. & G.
Harrison & Estes	697	Escambia	—	14	9,013.01	C. G. & G.
Franklin Const. Co.	706-A	Putnam	12.09	—	83,567.57	C. G. & G.
W. J. Bryson Paving Co.	714	Union	10.20	—	67,006.89	C. G. & G.
Sellers Const. Co.	715	Union	3.20	—	20,752.62	C. G. & G.
Little & Lee, Contractors	742	Alachua	7.65	—	39,762.96	C. G. & G.
Johnson, Drake & Piper	680	Bay	—	4,000	829,392.71	Conc. & Steel
Johnson, Drake & Piper	681	Bay	—	7,530	1,119,966.46	Conc. & Steel
F. W. Simpson	764	Suwannee	12.00	—	55,773.19	C. G. & G.
F. W. Simpson	765	Suwannee	7.00	—	30,428.89	C. G. & G.
Duval Engr. & Contr. Co.	677-A	Levy	6.96	—	88,648.38	R. B. S. T.
W. J. Bryson Paving Co.	53-B	Lake	—	570	96,431.98	Conc. Bridge
C. G. Kershaw Contr. Co.	719	Suwannee	8.57	—	40,355.35	C. G. & G.
Amer. Bascule Bridge Corp.	53-B	Lake	—	—	16,471.40	Bascule
Nashville Bridge Co.	685-B	Franklin	—	120	16,183.45	Steel Span
N. B. Burton	677-D	Levy	3.05	—	15,827.95	C. G. & G.
Totals			563.31	19,095.0	\$11,684,117.98	

Page Webster!

Kid Fresh: "What is tact?"

Prof.: "My boy, if you tell a girl that time stands still when you look into her eyes, that's tact. But if you tell her that her face would stop a clock, look out."

No Dieting for Him

Doctor—"Is your husband following out the diet I prescribed for him during this month?"

Mrs. Flaherty—"He is not, sorr. Afther two days av it Mike sez to me, sez he: "Oi'll not be starvin' mesel't' death jis for the sake o' livin' a bit longer."

SLAG

**For any Type of Concrete Paving or
Surface Treatment**

Our Woodward Plant (destroyed by fire July 6th, 1926) has been rebuilt with the most modern Crushing and Screening equipment. This new plant is producing a material unexcelled in correct and uniform sizing.

Our daily capacity from two plants is 3,000 tons, and in addition thereto, we have storage facilities for taking care of rush or emergency orders.

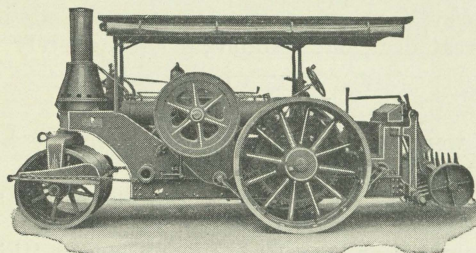
Write or telegraph for delivered prices.

Woodstock Slag Corporation

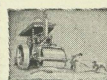
807-8-9 Southern Railway Building
BIRMINGHAM, ALABAMA

BUFFALO-SPRINGFIELD ROLLERS

**The choice of experienced
engineers and contractors**



**Furnished in all weights and types—
motor and steam propelled.
Inquiries Invited.**



**The Buffalo Springfield Roller Co.
Springfield, Ohio.**

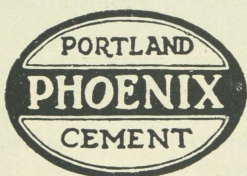


FLORIDA AGENTS

E. F. HOLMES
37 N. W. Third Ave.,
Miami

M. D. MOODY
402 Masonic Temple,
Jacksonville

**For
Perfect Concrete
USE**



Standard since 1898

Manufactured By

Phoenix Portland Cement Corp.

Plant

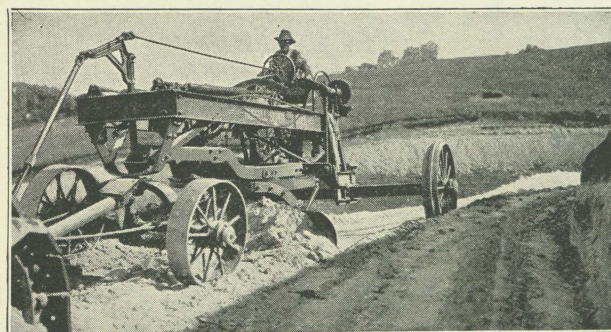
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Sales Office

Alabama Power Building

BIRMINGHAM, ALABAMA

Capacity 1,500,000 bbls. annually



The STRONG-STURDY Russell Super-Mogul

Tears up the toughest ground—moves great gobs of dirt—accomplishes more in "a once over" than smaller outfits handle with several rounds—and that is where the economy lies in road building.

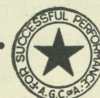
Weight 10,850 pounds of steel *plus*—extra strength built into the parts we know are most likely to be put to unusual and extreme demands—more work and better work at less cost per mile.

Special features—Combination Scarifier in front of blade may be operated with the blade or separately as desired. Back-Sloper for building flat bottom ditches—easily and quickly attached.

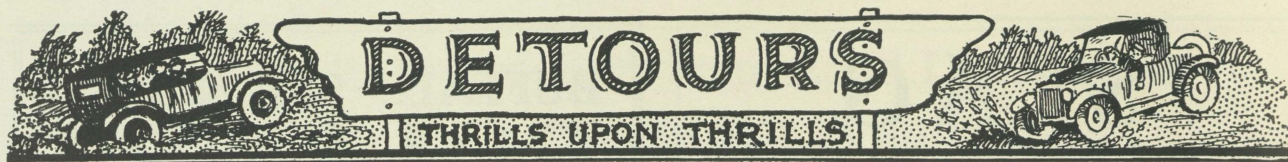
Everything for road construction, road maintenance and road repairing—

RUSSELL GRADER MFG. CO.

MINNEAPOLIS, MINN.



JULIEN P. BENJAMIN, Jacksonville, Fla.



Just So

"Sedentary work," said the college lecturer, "tends to lessen the endurance."

"In other words," butted in the smart student, "the more one sits, the less one can stand."

"Exactly," retorted the lecturer; "and if one lies a great deal, one's standing is completely lost."

No Spectator

They were newly wedded and not in the best of circumstances. Said he, "if things don't go better with us, darling, I suppose your father won't see us starve."

"No, poor dear," replied the young wife, "his eyesight gets worse every day."—Boston Transcript.

Must Have Company

Auntie—"Do you ever play with bad little boys, Willie?"

Willie—"Yes, Auntie."

Auntie—"I'm surprised. Why don't you play with good little boys?"

Willie—"Their mothers won't let me."—Answers.

Tintinnabulary Chorus

She—"Don't you think their wedding presents made a striking display?"

He—"They certainly would have if the eleven parlor clocks had all been going."—Boston Transcript.

Rest in Peace

They're pickin' up the pieces,

With a dustpan and a rake,

Because he used his horn

When he oughta used his brake.

—Hardware Age.

While the Gideons are placing their Bibles in El Paso's hotels, we trust that they will slip a couple to the man who makes the rates.—El Paso Times.

If Nature didn't foresee the flivver age, what was she trying to do when she developed the grasshopper?—Akron Beacon-Journal.

The favorite story is the one about the Scotchman who opened his pocketbook in January and a June bug flew out.

This young Oklahoma bandit who tied a marshal to a tree and got away with his automobile seems to be about ready for promotion to the Chicago branch.—Arkansas Gazette.

The problem of what Colonel Lindbergh will do after the shouting and cheering have subsided has been solved. He will be opening his personal mail for the rest of his life.—Seattle Times.

SUCH IS FAME

Several years ago, Firestone, Ford, Edison and Burroughs were touring through West Virginia. A light on their car went bad and they stopped at a little crossroads store in the Buckingham section. Henry Ford went into the store to make the purchase.

"What kind of automobile globes do you have?"

"Edison," replied the merchant.

"I'll take one," said Ford, "and you may be interested to know that Mr. Edison is out in my car."

"So?" said the merchant.

When the light was put in it was found that a new tire was needed, so Ford went back to the store and asked what kind of tires the merchant had.

"Firestone," was the reply.

"By the way, you may be interested to know that Mr. Firestone is out in my car, and that I am Mr. Ford—Henry Ford."

"So?" said the merchant, and let drive a long squirt of tobacco against the wall.

While the merchant was putting on the tire, Burroughs, who had white whiskers, leaned out of the car and said, "Good morning, sir."

The merchant looked up at him with a grin of sarcasm, and said, "If you try to tell me that you are Santa Claus, I'll be damned if I don't crown you with this wrench."—Ex.

Did He Spell It?

The swimmer was before Magistrate Lawrence T. Gresser, charged with driving an automobile at thirty-five miles an hour. Miss Ederle pleaded guilty, and Magistrate Gresser said:

"I will suspend sentence for you because of your big feat."

Miss Ederle smiled, thanked the court and went out.—Baltimore Sun.

Not Amiss

"I hear that the new lawyer is going to get married. What's the girl's first name?"

"Sue—I believe."

—Notre Dame Juggler.

Prof.: Geraldine, what do you thing of The Comedy of Errors?

Geraldine (brightly): I think that is one of Shakespeare's darlingist puns.

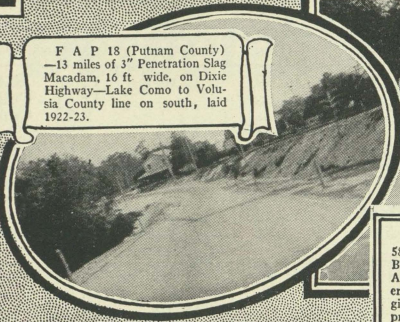
Prof. (frigidly): What do you mean when you say pun?

Geraldine: Why, Professor, a pun is a play with words, isn't it?—Ollapod.

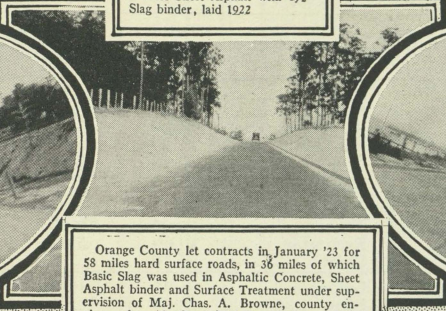
We gather from the remarks of Secretary Wilbur that our aviators have created so much international good-will, amity, tolerance, and brotherhood that we must all arm to the teeth.—The New Yorker.

If all the end-to-end statisticians were placed end to end, they could be done away with very nicely.—Minn. Ski-U-Mah.

F A P 18 (Putnam County)
—13 miles of 3" Penetration Slag
Macadam, 16 ft. wide, on Dixie
Highway—Lake Como to Volu-
sia County line on south, laid
1922-23.



F A P 13 (Orange County,
from Plymouth to Mt. Dora),
9 miles Sheet Asphalt with 1½"
Slag binder, laid 1922

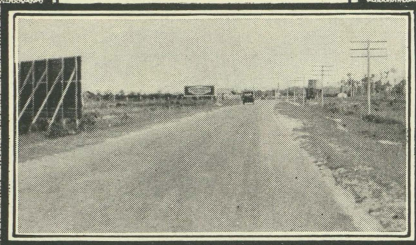


Slag Concrete paving (125,000
sq. yds.) on Dixie Highway in
New Smyrna, laid 1925-26.

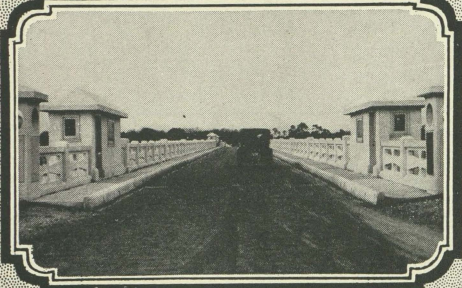


Orange County let contracts in January '23 for
58 miles hard surface roads, in 36 miles of which
Basic Slag was used in Asphaltic Concrete, Sheet
Asphalt binder and Surface Treatment under su-
pervision of Maj. Chas. A. Browne, county en-
gineer, formerly State Highway Engineer. This
progressive county is now using thousands of tons
of Basic Slag in an 8 million dollar road program
recently authorized.

Two other Slag Concrete pro-
jects, nearing completion, are
project 693 (St. Lucie County)—
from Ft. Pierce to Martin Coun-
ty line—8.93 miles. And Project
694 (Martin County) 8.45 miles
slag concrete paving from St.
Lucie County line to Stuart.



Alachua County: 16½ miles of "Type B"
surface treatment, laid 1923, from Waldo
to Gainesville on main Jacksonville-Tampa
highway. Over 60% of total mileage on
this main highway is Bituminous Slag
Macadam. In Alachua County alone over
370,000 sq. yds. of this modern "non-skid"
paving has been laid—over 8 million sq.
yds. throughout the state. The splendid
condition of these highways today is the
reason Alachua County officials are using
Basic Slag steadily in new projects now
under way.



Trout River Bridge (Duval County near
Jacksonville) This massive 1218 ft. Slag
Concrete structure, completed 1926, was
built under direction of A. B. Carrick,
county engineer. This bridge has attracted
national attention on account of (1) its un-
usual strength and (2) the tremendous
saving in concrete, and money, effected
through use of Basic Slag in a specially de-
signed mix.



F A P 240 (Columbia County), 10
miles of 3" Penetration Slag Macadam, 16'
wide, on an 8" Ocala Lime Rock base, this
highway on Road No 1 was laid in 1922.



Experience

Okehs the use of

"ENSLEY" & "ALA CITY"
BASIC SLAG
CRUSHED & SCREENED

for all types of hard
surface roads and streets

THE magnificent system of high-
ways throughout Florida has
attracted national attention.
And so has this fact. Good roads
have cost LESS, much less, in Flor-
ida than in any state in the union.

Ocala Lime Rock, Florida's nat-
ural road base material, and Slag
Chips (40 lbs. per sq. yd. costing
less than 10c) have made this low
cost record possible on more than
700 miles of highways.

Of all the counties in Florida enjoying
hard surface roads 75% are now being
served by "non-skid" Slag Asphalt
roads. Careful records show that Flor-
ida officials have used Basic Slag in
more than 900 miles of hard surface
roads and streets during past ten years.

State, County and City officials—under
whose supervision these highways have
been built—are to be warmly congratulated.

BIRMINGHAM SLAG CO.

Slag Headquarters for the South

Atlanta Montgomery Jacksonville
Thomasville Birmingham Ocala, Fla.

Status of Construction

THROUGH MAY 31, 1927.

Proj. No.	Contractor	Road No.	County	Total Length Miles	Clearing Miles	Grading Miles	Base Miles	Surface Miles	Type	Per Cent Complete
41	Morgan-Hill Paving Co.	4	Dade	12.00	12.00	12.00	12.00	12.00	S.A.	100.00
46	McMahan Const. Co.	3	Nassau	11.51	.....	.....	.....	11.51	Conc.	100.00
47	J. B. McCrary Engr. Corp.	4	St. Johns	14.96	.....	.....	.....	9.73	Conc.	64.00
48	H. E. Wolfe	4	St. Johns	15.39	.....	.....	13.55	2.25	S.T.R.B.	85.00
49	A. J. Hoffman	4	Flagler	13.82	13.82	13.82	.....	.....	Graded	100.00
50-A	Boone & Wester	14	Putnam	6.19	6.06	6.06	.....	.....	Graded	98.00
50-B	B. Booth & Co.	14	Putnam	9.78	9.78	9.78	.....	.....	Graded	100.00
50-C	E. Roy James	14	Putnam	10.03	10.03	9.53	.....	.....	Graded	98.00
52	W. J. Bryson Paving Co.	1	Escambia	10.09	5.03	2.31	.....	.....	Graded	30.00
53-A	Manley Constr. Co.	2	Lake	7.10	.....	.....	7.11	3.55	B. C.	84.00
53-C	Tampa Sand & Shell Co.	2	Lake	1.87	1.83	1.72	.....	.....	Graded	98.00
54	Noonan-Lawrence	1	Leon	13.00	.....	.....	.....	5.20	Conc.	37.00
58	Duval Engr. & Contr. Co.	1	Leon-Jefferson	12.53	.....	.....	12.53	0.00	S.T.R.B.	81.28
59	Higgison Construction Co.	1	Jefferson	9.10	.....	.....	.....	7.73	Conc.	87.00
500-A	Noonan-Lawrence	20	Bay	9.65	9.65	9.65	.....	9.65	Conc.	100.00
502	State Convict Forces	10	Gulf	6.94	Not reported			.....	S.T.R.B.	.....
529	M. C. Winterburn, Inc.	1	Suwannee	12.66	.....	.....	.....	12.66	Conc.	100.00
533	Baker & Foulks, Inc.	1	Suwannee	13.40	.....	.....	13.40	13.40	S.T.R.B.	100.00
543	Lake Worth Const. Co.	3	Seminole	14.20	14.20	14.20	.....	.....	Graded	100.00
543	M. C. Winterburn, Inc.	3	Seminole	14.20	.....	.....	1.42	0.00	Bit. Mac.	10.00
564-C	Stidham & Hughes	5	Charlotte	4.11	.....	.....	3.49	.45	S.T.R.B.	71.00
573-D	F. X. Bradley & Co.	2	Orange	16.81	0.00	0.00	.....	.....	Graded	0.00
580	State Convict Forces	19	Dixie	16.50	13.52	13.52	13.52	8.00	S.T.R.B.	80.00
587	C. G. Kershaw Const. Co.	5-A	Columbia	4.38	4.38	4.34	.....	.....	Graded	99.00
592	U. S. Fidelity & Guaranty Co.	10	Franklin	7.89	7.10	7.10	.....	.....	Graded	92.00
614	W. J. Bryson Paving Co.	5	Sarasota	17.34	17.07	15.51	.....	.....	Graded	88.00
614	West Construction Co.	5	Sarasota	17.34	.....	.....	2.67	0.00	Bit. Conc.	10.00
619	J. L. Gladwell	5	Alachua	9.28	9.28	9.28	.....	.....	Graded	98.00
621	Penton-Mathis Const. Co.	1	Okaloosa	19.70	19.70	19.50	.....	.....	Graded	99.00
623	State Convict Forces	35	Madison	12.91	12.91	12.91	.....	0.00	Sand Clay	81.20
640-A	S. J. Groves & Sons Co.	4	Martin	9.00	9.00	8.55	.....	.....	Graded	91.00
640-B	Lake Worth Const. Co.	4	Martin	11.80	11.80	4.13	.....	.....	Graded	56.60
641	Langston Const. Co.	4	Palm Beach	11.90	.....	.....	7.14	0.00	S.T.R.B.	60.00
648	Wm. P. McDonald Const. Co.	2	Hardee	6.36	.....	.....	3.91	0.00	S.T.R.B.	50.00
651	State Convict Forces	10	Gulf	14.72	14.72	14.72	.....	10.00	S. Clay	60.00
653	H. D. Spangler	4	Broward	13.46	11.03	4.71	.....	.....	Graded	54.80
657	State Convict Forces	6	Jackson	10.00	10.00	9.50	.....	9.00	S. Clay	90.00
659	M. C. Winterburn, Inc.	3	Clay	13.27	7.96	.....	.....	.....	Graded	76.00
659	Duval Engr. & Contr. Co.	3	Clay	2.80	.....	.....	2.80	0.00	S.T.R.B.	83.00
660	Langston Const. Co.	3	Clay	10.52	.....	.....	10.52	6.31	S.T.R.B.	96.00
668	E. F. Powers Const. Co.	4	Brevard	13.45	13.45	13.45	.....	.....	Graded	100.00
668	C. A. Steed & Sons Co.	4	Brevard	13.45	.....	.....	2.00	0.00	S.T.R.B.	21.00
669-C	R. C. Huffman Const. Co.	27	Dade	12.00	7.80	5.40	.....	.....	Graded	47.00
669-D	R. C. Huffman Const. Co.	27	Dade	12.30	6.15	1.85	.....	.....	Graded	16.00
669-V	Alexander, Ramsey & Kerr, Inc.	27	Collier	11.91	11.91	11.91	.....	.....	Graded	100.00
669-W	State Convict Forces	27	Collier	15.40	12.13	12.13	12.13	0.00	S.T.R.B.	89.00
671	State Convict Forces	20	Jackson	4.07	4.00	3.25	.....	.....	Graded	80.00
673	State Convict Forces	1	Gadsden	14.87	14.87	14.59	.....	14.00	S. Clay	98.00
676-A	L. M. Gray	19	Levy	9.96	.....	.....	9.95	9.95	S.T.R.B.	100.00
676-B	L. M. Gray	19	Levy	14.39	.....	.....	12.23	3.31	S.T.R.B.	74.00
676-C	Langston Const. Co.	19	Levy	15.02	15.02	13.52	.....	.....	Graded	91.60
676-C	H. L. Clark & Sons Co.	19	Levy	15.02	.....	.....	3.15	0.00	S.T.R.B.	21.00
677-A	A. J. Hoffman	13	Levy	6.96	6.96	6.96	.....	.....	Graded	100.00
677-B	Coastal Const. Co.	13	Levy	11.58	9.84	8.68	.....	.....	Graded	71.00
677-C	Boone & Wester	13	Levy	10.16	7.62	1.02	.....	.....	Graded	38.00
677-D	Thompson & Moseley, Inc.	13	Levy	7.58	6.82	3.03	.....	.....	Graded	63.00
683-C	Lake Worth Const. Co.	4	Palm Beach	8.27	7.61	3.72	.....	.....	Graded	52.00
685	Deen, Yarborough & Ebersbach	10	Franklin	17.43	8.80	5.18	.....	.....	Graded	36.63
687-A	Manley Const. Co.	2	Lake	15.00	.....	.....	8.40	0.00	S.A.	22.00
687-B	B. Booth & Co.	2	Lake	15.22	14.61	12.18	.....	.....	Graded	90.87
691	Mason Payne Co., Inc.	4	Indian River	5.52	5.52	5.24	.....	.....	Graded	98.00
692	Boone & Wester	4	St. Lucie	7.38	7.38	6.27	.....	.....	Graded	98.00
693	Johnson, Drake & Piper, Inc.	4	St. Lucie	8.73	.....	.....	.....	8.73	Concrete	97.00
694	Nelson Brothers	4	Martin	8.48	.....	.....	.....	3.65	Concrete	43.80
695	S. Vadner & Tampa Sand & Shell Co.	2	Lake	10.54	9.48	2.63	.....	.....	Graded	31.00
698	Curtis & Gubbins	19	Leon	12.43	9.32	7.21	.....	.....	Graded	59.30
699	State Convict Forces	19	Leon	7.71	7.71	6.20	.....	.....	Graded	75.00
700	State Convict Forces	19	Jefferson	9.26	0.00	0.00	.....	.....	Graded	0.00
713	C. A. Henderson	28	Columbia	10.00	3.50	1.00	.....	.....	Graded	21.52
718	C. G. Kershaw Const. Co.	5-A	Columbia	8.22	8.22	8.14	.....	.....	Graded	99.30
721	L. M. Gray	3	Putnam	4.50	4.50	4.50	4.50	4.50	S.T.R.B.	100.00
740	State Convict Forces	10	Gulf	0.00	0.00	0.00	.....	.....	Graded	0.00
743	State Convict Forces	10	Bay	18.25	0.00	0.00	.....	.....	Graded	0.00
745	State Forces & Taylor Co.	13	Taylor	14.00	0.00	0.00	.....	.....	Graded	0.00
747	Finlayson & Morris	35	Jefferson	6.50	1.30	.33	.....	.....	Graded	6.00
770	State Convict Forces	22	Brevard	9.00	0.00	0.00	.....	.....	Graded	0.00
Total Complete May 31, 1927				2033.58	1962.82	923.39	1488.72			
Complete Month of May				42.30	50.58	53.61	62.38			
Total Complete April 30, 1927				1991.28	1912.24	869.78	1426.34			

TOTAL MILEAGE COMPLETE

	Concrete	Brick	B. C.	S. A.	B. M.	Asph. Block	S.T.R.B.	S. C.	Marl	Total
Complete to April 30, 1927	191.80	17.13	15.92	78.05	88.84	23.20	650.12	425.94	27.58	1504.24
Complete Month of May	18.89	.....	3.01	3.42	.....	.....	44.39	.....	.....	69.71
Complete to May 31, 1927	210.69	17.13	18.93	81.47	88.84	23.20	694.51	425.94	27.58	1573.95

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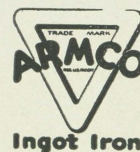
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Sales Offices: 1011 Bisbee Bldg., Jacksonville, Fla.
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Armco Corrugated Culverts at the Venice (Florida) Golf Course.

Florida Relies on



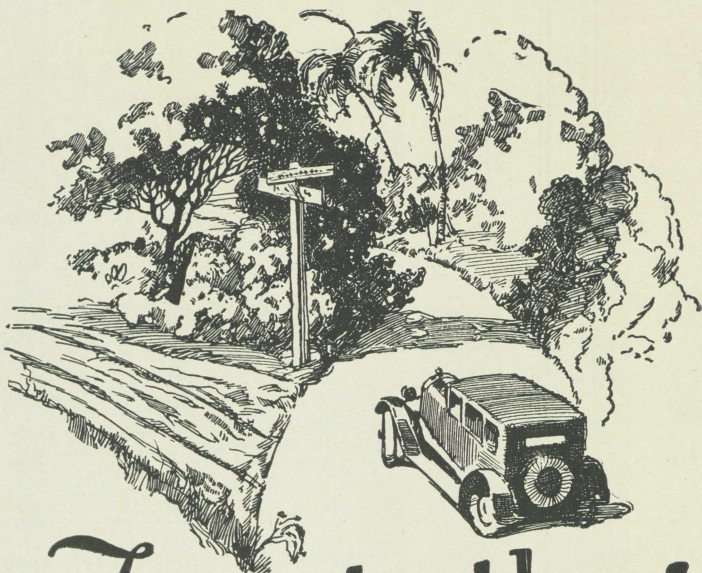
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